



POST-TRAUMATIC STRESS DISORDER Factsheet

August 2021

What is DTI?

Diffusion tensor imaging (DTI) is a specialised imaging technique that uses MRI technology to investigate the movement of water within tissues of interest. By applying a magnetic field, the movement (“diffusivity”) of water molecules can be visualised in vivo. The diffusion of water is influenced by the cellular structure of the surrounding tissues, and measures such as fractional anisotropy (FA) were derived as an approximate measurement for the freedom of movement. In areas of high structural coherence such as white matter, FA is highest, indicating that water is moving in relatively fixed directions. It is lower in grey matter, and close to zero in cerebrospinal fluid, indicating that water is moving freely. Consequently, changes in FA values are interpreted to be representing alterations in the structural integrity of the regional white matter.

What is the evidence for changes in white matter in people with PTSD?

Moderate to high quality evidence found both region of interest and whole brain meta-analyses showed that patients with PTSD have significantly higher FA in the inferior fronto-occipital fasciculus and lower FA in the genu of the corpus callosum. Whole brain meta-analyses also identified higher FA in the left inferior temporal gyrus and lower FA in the anterior cingulum and left corticospinal tract.



NeuRA (Neuroscience Research Australia) is one of the largest independent medical and clinical research institutes in Australia and an international leader in neurological research.

Diseases of the brain and nervous system pose the greatest health, economic and social burden of any disease group because they are chronic, debilitating and have no known cures.

Medical research is the cornerstone of efforts to advance the health and wellbeing of families and the community. Our dedicated scientists are focussed on transforming their research into significant and practical benefits for all patients.

While we hope you find this information useful, it is always important to discuss any questions about PTSD and its treatment with your doctor or other health care provider.

For more information see the technical table

HOW YOUR SUPPORT HELPS

We are able to make significant advances due to the generosity of countless people. Your donation allows us to continue to work towards transforming lives. For information on how you can support our research, phone **1300 888 019** or make a secure donation at neura.edu.au/donate